What's the Buzz?

by Charles Kennard
2023

Singing and buzzing insects create the moods of summer days and nights in gardens and meadows, but often the generators of the sounds are elusive to the eye. When the sounds of nectar-gathering honeybees, or of crickets calling are all-enveloping, one doesn't know where to look. Or, when zeroing in on a *chirp*, the well-disguised insect goes quiet to avoid detection.

The main noisy-by-intent insects of Marin fall into four groups: grasshoppers, katydids, crickets, and cicadas, and there are so many genera and species of these that it takes an entomologist to pin them down—both metaphorically and literally speaking.

Among our grasshoppers, the marsh meadow grasshopper makes a brief buzzing sound of increasing volume by rubbing its hind leg against a wing, or *stridulating*, for short. In open grassland, a burst of sound like a fan opening and closing rapidly, combined with a flash of pink, indicates a rose-winged grasshopper *crepitating*, as it flies a few yards to a new spot, where it quickly folds its wings and blends in again.

A wingless katydid nymph rests in a bed of roses. Photo by Gary Leo

Turning up the volume, the bright green, grasshopper-like male katydids sing at night in a pulsating chorus that some people associate with a good night's sleep. To this end, hours-long recordings of katydids stridulating can be found on Youtube, providing a lullaby of "Katy did, Katy didn't, Katy did,
Katy didn't," all night long—just the sound that owners of caged katydids and crickets traditionally enjoyed in China and Japan.

Among Marin's katydids are the fork-tailed bush katydid, the greater anglewing, and the invasive Mediterranean katydid. Katydids have long antennae, distinguishing them from grasshoppers. I caught a katydid eating my precious redbud seedlings, and as it seemed fair game I, in turn, ate the insect (dry roasted). In Oaxaca, roasted grasshoppers or *saltamontes* (mountain-leapers), flavored with lemon and spice, are a delicacy.

The chirping of crickets was my first experience of nature in Marin. Living in San Francisco, I was on the phone with my girlfriend (now wife), who had taken the phone on its long, stretchy cord to her back porch in Fairfax, where the shrill sound of snowy tree crickets filled the summer night, and was the background to our conversations.

These little insects are slender and pale green, with long bent hind legs and delicate transparent wings that the male rubs together to attract a mate. In my San Anselmo back yard, it seems as though they sing "Verdi, Verdi, Verdi, Verdi," but on tracking down individuals in the darkness, I have discovered that in a synchronized duet, one sings "Ver, Ver, Ver, Ver," and another fills in with "di, di, di, di." There are at least three species of tree cricket in Marin, and they can be distinguished by the frequency of their chirps alone. When not in singing mood, crickets search for aphids and ants, as well as tender plants to eat.

Snowy tree crickets' shrill sound fills summer nights. Photo © Songsofinsects.com

The frequency of the snowy tree cricket's song increases with nighttime air temperature in a fairly regular way, so an estimate of the temperature, in Fahrenheit, can be arrived at by counting the chirps in 13 seconds and adding 40. However, on a hot evening, and especially near paving that has retained the heat of the day, it is no easy task to count

the chirps. Perhaps someone adept with a smartphone could record them for 13 seconds, and then play back the sound slowly, while counting. The other tree crickets, meanwhile, are registering the chirping with aural organs on their forelegs.

Scientists working in the field note that crickets west of the Great Plains chirp at a slightly slower pace than their eastern relatives, perhaps an evolutionary reaction to other species' songs. More romantically, Nathaniel Hawthorne, the nineteenth-century author, opined that, "If moonlight could be heard, it would sound just like that"—the trilling of crickets.

As the weather warms in May, newly-hatched spring cicadas begin the daytime cicada repertoire with slow clicking sounds, produced by crepitation, as if someone were drawing a fingernail lazily across a stiff comb. Cicadas have the appearance of bulked-up horse flies, but with two pairs of transparent wings held neatly, covering the body. Both the nymph and the adult feed on the watery sap of trees, respectively underground and above ground. Their empty nymphal cases can often be seen attached to a twig or tree's bark.

The spring cicada's song announces the arrival of warm summer weather. Photo by Ayesha Ercelawn

Beginning in August, the incessant, hard buzz of male cicadas is heard, made by organs called *tymbals* on the side of the abdomen, where ribs bend and click at about 6000 times a second, the sound being amplified by an air sac. To avoid deafening himself, the insect closes his own ears before starting the din. Humans spending an extended time near a large chorus of cicadas should take precautions too, as the sound of nearly 100dBA exceeds the maximum recommended level of 85dBA.

Our cicadas have lifecycles of 1–3 years, but in the eastern U.S., some species have synchronized lifecycles of 13 or 15 years, at the end of which time billions hatch in the early summer season. Get ready for Brood XIII in northern Illinois and southern Wisconsin, and Brood XIX, concentrated in Missouri, both due to hatch in 2024!

A much quieter species is the San Francisco lacewing, resembling a snowy tree cricket, but with short legs. Both have two pairs of wings, both sing at night, but both sexes of the lacewing sing, and make a softer sound, produced by vibrating the abdomen. When a male and female find themselves singing a harmonious duet, they get together to start a new generation. They are welcome residents in our gardens, as the larvae eat aphids and caterpillars in addition to nectar and pollen—and in the springtime the jays, in turn, enjoy the lacewing adults as they collect food for their young.